

THE FUNCTIONAL VALUE OF LEAVING ONE SEGMENT OF THE UPPER LOBE COMPARED WITH THAT OF A LOBECTOMY*

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The general principle followed in resection for pulmonary tuberculosis is to preserve as much functioning lung parenchyma as possible. A segmental resection has therefore always been preferred to an upper lobectomy. The aim of this paper is to report the functional result obtained after different resections in order to ascertain the value of leaving one segment of the upper lobe.

Earlier investigations concerning the reduction of lung function after resection for pulmonary tuberculosis have not shown much difference when segmental or lobar resection was performed. It has been suggested that this lack of difference might be caused by the greater incidence of complications among patients having segmental resections.

the amount of lung tissue resected. We have therefore chosen to compare the resection of one upper lobe with the resection of two segments in a group of unilateral cases in which thoracoplasty has been added.

METHOD

Only cases have been chosen in which no pleural or parenchymal disease was present on the contralateral side. The patients were called back for a functional study one year after the operation. Bronchspirometry was performed with the aid of a Carlens tube.

Altogether 40 patients agreed to have post-operative bronchspirometry. The results are summarized in Tables I and II.

TABLE II

POST-OPERATIVE FUNCTIONAL RESULT AFTER RESECTION OF LEFT UPPER LOBE COMPARED WITH THAT OBTAINED AFTER SEGMENTAL RESECTION†

TABLE I
POST-OPERATIVE FUNCTIONAL RESULT AFTER RESECTION OF RIGHT UPPER LOBE COMPARED WITH THAT AFTER SEGMENTAL RESECTION†

Operation	No. of Cases	Function of Right Side as Percentage of Total Function					
		Oxygen Uptake		Ventilation		Vital Capacity	
		Mean Value	Range	Mean Value	Range	Mean Value	Range
Resection right upper lobe	15	38	27-49	50	37-69	38	34-48
Resection apical and posterior segments right upper lobe	5	40	36-44	39	25-48	42	39-46
Resection anterior segment right upper lobe	1	47		53		47	

† An osteoplastic thoracoplasty was performed in all cases.

If, however, an osteoplastic thoracoplasty is added to the segmental resection no more complications are encountered than after a lobectomy. In such a series it is found that the reduction of function is roughly proportionate to

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Operation	No. of Cases	Function of Left Side as Percentage of Total Function					
		Oxygen Uptake		Ventilation		Vital Capacity	
		Mean Value	Range	Mean Value	Range	Mean Value	Range
Resection left upper lobe + osteoplastic thoracoplasty	9	32	23-39	32	23-44	32	25-44
Resection apico-posterior segment left upper lobe + osteoplastic thoracoplasty	5	33	17-47	35	28-45	38	31-47
Resection apico-posterior and anterior segment left upper lobe + osteoplastic thoracoplasty	1	28		29		24	
Resection apico-posterior segment left upper lobe + rib resection thoracoplasty 1 to 5	4	38	33-42	37	23-43	36	29-41

‡ An osteoplastic thoracoplasty was added in all cases.

CONCLUSION

In this small series of cases there seems to be not much gain in pulmonary function by leaving one segment of the right and two segments of the left upper lobe as compared with a lobectomy.

These findings will naturally not change our policy to save as much functioning lung parenchyma as possible. A segmental resection will therefore always be preferred when it is possible to perform it. Furthermore, the anterior segment of the right upper lobe is often fused with the middle lobe, resulting in the same amount of air leakage from the resected areas, whether the anterior segment is left or resected.

On the other hand, it is evident that a small fibrotic anterior segment should not be saved. Whenever, after the resection of the posterior and apical segments, the air leakage from a small anterior segment makes it necessary to consider an osteoplastic thoracoplasty, we believe it is

better to remove the anterior segment, making the thoracoplasty unnecessary.

SUMMARY

Forty patients have been investigated post-operatively by bronchspirometry to determine the value of resecting two segments from the upper lobe compared with lobectomy. Not much function was gained by the segmental resection. It is therefore concluded that if a healthy, well-ventilating anterior segment without much air leakage is not achieved it is better to go back and remove the segment with questionable functional value, thereby possibly diminishing post-operative complications.

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